Calculated Participation:
Blacks in the Aeronautical Fields and the Challenge of Integrating Federal Employment during the Civil Rights Movement, 1958-1964

Shayla Jacobs
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Dr. David Cline
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In the early 1960s, a brilliant group of African-American aerospace and astronomical engineers, electrical engineers, mathematicians and military pilots provided their brain power to serve the country during the space race of the 1960s. Among the employers that opened their doors to educated blacks by the 1960s were NASA, Cape Canaveral, Lockheed Missiles, the Manned Spacecraft Center (MSC), Marshall Space flight Center (MSFC), Northrop Corporation and Space Labs, and Vultee Aircraft. The Navy and Air Force was also in the throes of desegregation and opportunity for military pilots who wished to become astronauts.

However, such opportunity was not without difficulties. Most of these government contractors were located in the South, a region in which white segregationists were unwilling to change Jim Crow laws, de facto racism, and institutional racism for blacks to secure employment in the aeronautical fields. Many black engineers, mathematicians and military pilots lived through this time of challenge and change, seizing life-changing opportunities to work in the aeronautical sector in the 1940s, witnessing the Civil Rights struggle beginning in the 1950s, and participating in desegregation in the South in the 1960s. Political pressure form the Civil Rights Movement partly resulted in the public encouragement of blacks to apply for careers at government contractors such as NASA and Lockheed Martin. Thus, the early 1960s were the culminating years for employment opportunity for black engineers, mathematicians and pilots participating in the space race, after decades of being forced to educate only black students as teachers and professors. The political influence of a radical Civil Rights Movement and the protection of federal law through executive order, along with the signing of civil rights bills into laws led to the desegregation of the defense industry and to the increase of sufficient numbers of blacks on the employment rolls. Most of these blacks quietly made their
contributions to the United States’ space race, even as their right to full citizenship was constantly contested.

During this transition period of desegregation and the implementation of equal employment practices of the aeronautical industry, these black engineers, mathematicians and military test pilots endured racism and discrimination while practicing their professions. However, they responded to backlash in ways they deemed appropriate for their individual situations, ranging from denial, to quiet resistance, to activism that corresponded to and coincided with the Civil Rights Movement. Blacks in the aeronautics industry were not at the forefront of the movement, yet they made strides for blacks in the professional world through their determined presence in white dominated fields. These black professionals contributed as much to the Civil Rights Movement as those involved in non-violent, public demonstrations to secure desegregation, voting rights and better educational opportunities. As a result, many blacks in the aeronautics and defense industries have reaped the benefits of these forerunners’ willingness to endure segregation and discrimination while crunching numbers, testing equipment or completing astronautical training.

Importantly, this particular history of blacks has only recently been brought to the surface in films such as Hidden Figures, released in 2016. Thus, black involvement in the aeronautics industry during the space race has been a concealed and understudied history. This paper does not seek to provide the history of black contribution to the space race. Instead, this paper is an attempt to provide a cursory overview of the history and historical implications of segregation and racism in the aeronautics industry and department of defense, as it relates to the experiences of black professionals within these careers, and the discrimination they faced during the Civil Rights Movement in late 1950s and early 1960s, amid the heyday of obsession with winning the
space race. It is imperative to note that histories are intertwined and often dependent on one another, as this paper also seeks to demonstrate. This paper also engages with the concept of the “long sixties,” which expresses the challenge of separating histories to fit neatly within a certain span of years. Indeed, the history of blacks seeking to fairly access federal employment begins with the struggle with constitutional rights from the Reconstruction era, the Progressive era of resegregation, the home front during WWII and the inception of the Space Race in the late 1950s. For blacks, the sixties were very “long” and its history complicated.

First, this paper seeks to historically situate blacks' access to federal employment, including the military, from Reconstruction to the appearance of Jim Crow in the early 1900s. Next, the political usage of executive orders for blacks to access employment and equality within the military in the 1940s and 1950s, allowing blacks to be marginally present in the aeronautics field will be discussed, along the with the experiences of blacks in the early aeronautical sector before the establishment of NASA. The executive orders and Civil Rights legislations of the late 1950s and early 1960s will be presented, as integration was still an issue in the aeronautics and military, along with the treatment and experiences of black engineers, mathematicians and pilots during the South’s process of transition to integration and equal opportunity employment. After determining the extent to which blacks were able to access federal employment as engineers, mathematicians and pilots in the early 1960s, the extent to which the legacy of these black men and women in the aeronautical industry and department of defense will be analyzed, to determine the state of blacks in this industry today.
Regression: Reconstruction & Resegregation in Federal Employment

In order to understand the plight of blacks and federal employment in the early 1960s, we must understand the long history of blacks and employment opportunities, specifically federal employment. Blacks have long grappled with employment in the federal sector in addition to struggles in general employment. After the Civil War and during Reconstruction from 1863 to 1877, educated blacks were afforded federal employment opportunities, granting them a measure of social status. By the 1910s, federal and public institutions would be resegregated, barring blacks from gainful employment, including federal employment. "During Woodrow Wilson's presidency [1913-1921]...the iron curtain of segregation fell on federal employment." Blacks who worked in the federal sector were fired and certain government sectors became segregated. By 1915, a photo was required with an application and blacks with high posts were either fired or forced to work in segregated areas to avoid contact. For the next 50 years, the progress of integration came to a halt, with little opportunity for blacks. In the decades until the 1940s, blacks sought better employment opportunities, but these were few and far between. The National Association for the Advancement of Colored People (NAACP) took cases of discrimination, including job discrimination to the courts and fought for justice using the law. Since Southern senators and representatives refused civil rights bills to allow blacks even general civil rights such as integration, voting and better education, segregation of federal employment continued for decades. It would not be until several presidents issued executive orders and establish committees to enforce the orders in the 1930s and 1940s, that there would begin to be a shift in the treatment of blacks in gainful employment. This barrier had to be broken in order for blacks to return to federal employment through organizations such as NASA and Lockheed. Hence, general employment and employment in the federal sectors specifically had been an issue
for about 50 years, until the gains made through executive orders into the 1960s and the civil rights laws that would soon follow.

**Executive Orders for Change: Roosevelt, Truman & Eisenhower**

In order for blacks to re-access equal employment, a series of executive orders, which included establishing committees, were ordered by President Franklin D. Roosevelt, President Harry S. Truman and President Dwight Eisenhower. An executive order is issued by a president and is the equivalent of federal law, usually executed in order to bypass Congress, which cannot approve or overturn an order. Executive orders created to outlaw racial discrimination would avoid rejection of the bill or certain filibustering by Southern Democrats, had the order been presented as a bill to eventually be signed into law. Ultimately, executive orders were created and signed to maintain the support of Southern Democrats, who used their influence to avoid the passing of civil rights legislation.

Most blacks at the time were unemployed or underemployed largely due to racial discrimination imbued within hiring practices. Under pressure from blacks upon the U.S. entering WWII, Roosevelt took action to address blacks concerns about lack of access to employment due to skin color. A form of this pressure was a threat to assemble a mass march in Washington D.C. by labor leader A. Philip Randolph, unless the U.S. government allowed blacks to work in defense plants and President Eisenhower attended to the issue of fair employment for blacks. Created in 1941, Executive Order 8802 meant to desegregate the defense industry, while Executive Order 9346, to create the Fair Employment Practices Committee to "monitor the national project of economic inclusion." Ultimately, this Committee was created to "end discrimination based on race, creed, color or national origin in federal employment and defense contracts." In addition, under Roosevelt, there would be a federal policing system of the
executive order, about which states were incensed.\textsuperscript{10} As a result of these complications and the pervasive practices, especially in the South, this order was not actively enforced\textsuperscript{11} and blacks were still discriminated against in the federal employment and in the military.

World War II was a critical time for blacks, as domestic federal employment opportunities during war time opened up not only for black men, but also for black women in the aeronautics. However, the numbers of blacks in these fields were miniscule due to discrimination. By 1948, President Truman issued Executive Order 9981, establishing the President's Committee on Equality of Treatment and Opportunity in the Armed Forces, which supposedly outlawed segregation in the armed forces. Truman, however, met with "an uncooperative Congress who blocked his legislative recommendations on civil rights."\textsuperscript{12} This order would later be very important for black pilots and engineers seeking to become astronauts in NASA, as employment within the military is required to be an astronautical candidate.

By the late 1950s, President Eisenhower was mandated to respond to the issue of civil rights for blacks. However, Eisenhower was not enthused about civil rights legislation in 1957 and 1960\textsuperscript{13} because he wanted to maintain the support of the Southern Democrats. However, Eisenhower allowed for an opening for blacks to enter the space race in his 1958 executive order for NASA. Eisenhower's order created the National Aeronautics and Space Administration (NASA), signifying the United States' presence in the space race, "[in order to] streamline the outer space components of the Defense Department."\textsuperscript{14} The 1958 order also "[mandated] the first astronauts to be selected from test pilots in the military, though minority participation was not mentioned."\textsuperscript{15} Black military pilots existed and they qualified not only to work for NASA, but also to apply to become astronautical candidates.
These executive orders, though not followed in practice, established a legal precedent for blacks, usually through cases brought to the NAACP, to claim discriminatory treatment in hiring practices. Most of these executive orders were not well-enforced and blacks, by and large, were still discriminated against in federal hiring practices and within the military. However, the executive orders assisted some blacks to inclusion within federal employment. There existed blacks who, as outliers, accessed federal employment during and after WWII, establishing the precedent for more blacks to follow their lead by the 1960s and beyond.

1940s and 50s: Attainment of Federal Employment for Black Engineers and Mathematicians

Interestingly enough, with so little legislative progress for blacks at the federal level for federal employment, some blacks managed to “slip through”. Federal employment was possible during the 1940s and 1950s, though these blacks dealt with harsh treatment under Jim Crow laws. During World War II, specifically, the United States needed domestic manpower and the desperation was such that blacks were asked to demonstrate their patriotism and provide their brainpower. During the war, many blacks migrated from rural areas to jobs relating to defense, resulting in a population of skilled black laborers. A number of blacks took the rare opportunity to work in the science and engineering fields in the aeronautical sector. During the second great migration (1940 to 1960), during and after WWII, a small group of blacks worked in higher paying jobs requiring degrees and also attended non-black colleges and universities, establishing their visibility in professions requiring education and skill. Still, though some blacks penetrated the federal employment barrier, most blacks were unable to access regular, dignified employment. Many of these black mathematicians, scientists and engineers were in the right place at the right time and took a rare opportunity in highly technical careers. Some began their
journey into federal employment in the 1940s; others were employed in the 1950s and 1960s, as the space race continued. Specifically, the defense department would be linked to the creation of NASA, as military engineers were required in order to beat the Soviet Union in the space race. The space program was the opportunity that demonstrated that African-American professionals were available and employable among the nation's top technological professionals. All experienced segregation and discrimination within the department of defense and other aeronautical industries. In recent years, oral histories conducted by writer Margot Shetterly and documentary producer Richard Paul along with scholar Steven Moss are the means by which their stories of discrimination within the aeronautics industry have surfaced. The following are their experiences in the aeronautics field of the Jim Crow South, which had yet to grapple with releasing a well-entrenched culture of racism and discrimination in the 1960s.

**The 1940s and 1950s:**

**Black Engineers’ and Mathematicians’ Experiences in Federal Employment**

Many blacks who worked for the aeronautics sector experienced Jim Crow within the industry, even as they contributed to highly technical fields. They responded in different ways discriminatory treatment. The experiences of blacks in federal employment below are based on compilations of oral histories from prominent male engineers Julius Montgomery and Frank Crossley, and from female mathematicians Dorothy Vaughn and Katherine Johnson, who were employed in the aeronautics industry in the 1940s and 1950s. Many blacks who contributed to the space race had already been hired during these two decades and had proven their skills for many years, keeping the door ajar for blacks who would be able to take advantage of equal employment opportunities by the mid to late 1960s.
**Black Male Engineers**

Julius Montgomery decided not to pursue an academic career, but instead to pursue a trade in order to be employable and still endured discrimination when he applied for jobs as radiotelephone operators license, to which he was told he did not qualify because he was black\textsuperscript{19}. He was working for a black radio station in Mobile, Alabama, but moved to Cape Canaveral in 1937 for better pay. He worked repairing ballistic missiles, mostly with circuits. He immediately encountered segregation and racism, but decided to be witty, joke around and diffuse discrimination and racism. Though the government helped blacks secure federal jobs, people like Montgomery had to overcome the blatant racist attitudes in order to remain there\textsuperscript{20} and keep the opportunities open for blacks who would come. In 1959, Montgomery took his name off the list to attend night school at Brevard Engineering College (BEC),\textsuperscript{21} so the school could remain open only to whites. Montgomery made personal choices in the midst of a Civil Rights Movement that was gaining great momentum. Montgomery applied the principles of self-help and accommodation to participate in the Civil Rights Movement, making individual choices instead of collective ones, even within the movement.\textsuperscript{22} His example demonstrates that many blacks did not march or become actively involved in Civil Rights, but advocated for themselves in the choice whether or not to engage racists, speak up for themselves when necessary, and not allow discriminatory behavior to deter them from practicing their technical skills and serving their country.

In the 1930s, Frank Crossley studied metallurgical engineering instead of aeronautical engineering because he would have to travel through hostile police territory in order to attend the school that offered it\textsuperscript{23}. He joined the segregated Navy and served in WWII. In 1944, under the Roosevelt administration, a small group of black Navy officers were allowed to give orders to
white crewman as part of an experiment to work toward desegregating the Navy; this group was named the “Golden 13.” Crossley was part of this historic group. He remembers having to sit out of social engagements with the white crewmen, but doing everything else together. He was in charge of 36 men and an officer. He reminisced that he learned not to respond to every racial epithet and to control his emotions. After WWII, he taught at Tennessee State for several years and later went on the work for the Illinois Institute of Technology (IIT) Metals Research Department within the emerging aerospace industry in 1961. Crossley’s strategy was to “stay as close to white people as the law and custom would allow,” in order to prove stereotypes about other groups wrong. As a black man, Crossley was part of early attempts to desegregate the military, and later went to work for NASA indirectly through the IIT.

Black Female Mathematicians and Engineers

Since the early 1940s, black women have worked in Langley Memorial Aeronautical Laboratory, which was part of the National Advisory Committee for Aeronautics (NACA). Originally, well-engineered planes were needed during WWII, for which more mathematicians were needed. White women had already been recruited as mathematicians—“computers” as they were known—since 1935. However, as the war continued and more computers were needed, there were not enough white women willing or able to respond to the call. Meanwhile, blacks such as Philip Randolph, leader of the Brotherhood of Sleeping Car porters contested employment discrimination, which influenced Roosevelt to sign Executive Orders 8802 and 9346. This would open doors for black female mathematicians, for soon after, job ads circulated to colleges and universities, newspapers and public institutions advertising for mathematics and engineering positions. Black women who had degrees in mathematics and engineering stepped into destiny.
Black women like Dorothy Vaughn, a college graduate in mathematics and a teacher, were working a temporary job as an army laundress before being hired as a “colored computer” to compensate for poor wages for black teachers. Katherine Coleman, also a math teacher, had earned a college degree in math and French and began a graduate degree in math at WVU, but left the program soon after. Katherine Goble also earned a math degree, leaving graduate school to be a wife and mother. Dorothy Hoover earned an undergraduate degree in mathematics as well and earned a master’s in math, teaching before coming to Langley. Mary Jackson had two Bachelor’s degrees in mathematics and physical science from Hampton Institute, became a teacher and later worked for the USO. All of these women were prepared for careers as computers, but simply needed the opportunity. All of these women had teaching experience because teaching was among the only respected professions that educated blacks could access to be upwardly mobile, and even then these blacks were forced to teach other black students. As black women, their lot was even more difficult because not only were women were not treated equally in the science and engineering fields, but to be black marked them for automatic humiliation. These women bore a double burden.

After the black computers were hired, they had to endure degradation of “separate but equal” facilities on a federal industrial complex. These black women were housed in a separate area of Langley, known as West Computing. Ironically, segregation was necessary in order to get them into Langley. As long as these women were segregated, and not seen, more continued to be hired. These women were willing to be hidden in order to take advantage of the chance to use their degrees and earn higher income. However, this does not mean they did not contest segregation. As a group, the women did not take well to the “Colored” sign on their table in the cafeteria at Langley, deliberating for some time about whether they should take the sign down.
Computer Miriam Mann finally put the sign in her purse and continued to do so whenever the sign reappeared until one day the sign did not go back up. Through persistence of intolerance of the “colored” table sign and taking action, Mann and the rest of the women contested segregation in a milieu of bright aeronautical minds.

Mary Jackson’s day of frustration also offers another experience of segregation in a federal industrial complex. One day, she asked several white women where the restrooms were and she was laughed at, storming off to go find a restroom on her own. She ran into Kazimierz Czarnecki, an engineer and assistant section head of the Supersonic Pressure Tunnel, and ranted to him about her treatment at Langley. Czarnecki listened and then made Jackson an offer to work with him in the engineering lab. For Jackson, that was the beginning of her career as a full-fledged NASA engineer. Though these women could do little to stop segregation, they took small actions as individuals and/or within a group to let those at Langley know how they felt about doing the same work, yet not receiving equal treatment.

Civil Rights Legislation: 1957 and 1960

During the circulation of executive acts and their enforcement, the fight for inclusive civil rights legislation continued. From the 1940s, it was believed that civil rights legislation was crucial in order for blacks to secure and remain employed as engineers and mathematicians in federally supported industries and executive order held the door open until civil rights bills began to be suggested and then passed under President Dwight D. Eisenhower in 1957 and 1960.

As a Texas senator, Lyndon B. Johnson was responsible for moving the 1957 Civil Rights Act through Congress. Southern Democrats in Congress were staunchly segregationist and were notorious for filibustering civil rights bills. The Civil Rights Act of 1957, designed to
primarily to secure voting rights for blacks, was a "congressional battle," one which Senator Johnson diluted by allowing weak reforms as long as Southern Democrats did not commence a filibuster. This act passed, signed by Eisenhower, but focused on voting rights and did virtually nothing for equal employment. The Civil Rights Act of 1960 did little better. On the bill as on recommendations for civil rights included: the illegality of school segregation, the illegality of crossing state lines to avoid prosecution for bombings; and the establishment of a Commission on Equal Job Opportunity under Government Contracts. Instead, its focus became securing voting rights for blacks in the South, and later also included weak reforms at the time of passage. In either case, equal opportunity employment was mentioned, but was not as high on the agenda for civil rights at the time. These acts still did not guarantee black access to federal employment and fair, inclusive treatment from federal employers. However, within a few short years, equal opportunity employment would be addressed, forever changing discriminatory hiring practices by law. Interestingly, the establishment of NASA would assist in these changes to access to employment as a civil right.

The Space Act of 1958 and NASA

While these black engineers and mathematicians toiled for the defense industry, and Civil Rights legislation became more of a priority in Washington, the space race was of utmost priority for the U.S. government after the Soviet Union put Sputnik into space in 1957. This achievement was the catalyst for creating a division of the U.S. government devoted entirely to space and its exploration. In October 1958, the federal government founded the NACA, combining all aeronautics-related operations, including Langley as a center, to accelerate the focus on space exploration. The precursor to NASA, then, was the National Advisory Committee for Aeronautics (NACA). In 1915, President Wilson authorized the creation of NACA to focus on
aeronautics research. NACA would later allow the entrance of black professionals during WWII, though his administration advocated legal segregation. Eisenhower signed an executive order creating the National Aeronautics and Space Administration (NASA) as an agency to develop a competitive space program, solidifying the United States’ premier involvement in space and as a world power. Eventually NACA would be renamed the national Aeronautics and Space Administration (NASA). Importantly, as a federal entity, NASA would be implicated in the:

"…challenge to racism in its southern host communities [which] had several components: NASA centers would obey and enforce presidential executive orders, laws passed by Congress, and directives issued by NASA headquarters, applying economic pressure at local and state levels, as intended by the federal government."43

Problematically, NASA was located in the South, proving to be an arduous challenge. NASA’s role in southern desegregation is indeed a hidden history, not only within the history of the space program, but also within civil rights at the federal level.44

Several years before the signing of the Civil Rights Act of 1964, NASA’s management attempted to balance the demands of the space race with the needs of society with regard to integration and equal employment. For a time, as the West Area Computers of Langley in Virginia experienced, NASA was segregated; as mentioned before, black female mathematicians and engineers ate lunch at a segregated table with a sign reading “Colored.”46 In addition, Vice-President Johnson had to convince NASA to “obey a Defense Department order not to let its astronauts and other employees live in segregated housing off base in Houston.”47 These blatant offenses had to be dealt with, as they occurred after the creation of Kennedy’s Executive Order 10925. Vice-President Johnson is known to have called Albert Thomas, Texas congressman, and
told him to desegregate NASA or it would receive no more federal funding. Thus, it was a great challenge within NASA for the prevailing Southern system of legal segregation to dismantle even amid demand by the federal government to hire blacks and integrate. Finally, in May 1958, the West Area Computer Unit, where the black computers worked, was disbanded through an organization memo. NASA would not only be at the forefront of the space race, but would also be implicated on the front lines of the employment struggle within the Civil Rights Movement. By the mid-60s, NASA was part of President Johnson’s “Great Society”, bringing federal jobs to the South to demolish both segregation and poverty. For the most part, implicating NASA and federal contractors into equal employment was successful, though initially a great challenge. President Kennedy’s order for federal contractors to practice fair hiring practices for blacks began the integration process and allowed black mathematicians and engineers to contribute their knowledge to the space race.

**Kennedy: Executive Order 10925, the PCEEO, and the Plans for Progress**

After Kennedy was elected President, he was aware of civil right issues, but was reluctant to move toward a legal resolve. Kennedy vacillated between garnering “the support of racist politicians against a civic obligation to fight for racial justice.” As a result, he did not sign a Civil Rights Act during his presidency. However, “although Kennedy's decision to forego legislation disappointed many civil rights advocates, the alternative of executive action held great promise.” Because federal legislation would not move past the Southern Democrats, Martin Luther King, along with leaders of the Southern Christian Leadership Conference (SCLC) and the Student Non-Violent Coordinating Committee (SNCC), applied pressure to the federal government through civil rights demonstrations, meetings and lobbying. Kennedy was mandated to take executive action in order to address the ever-more pressing issue of civil rights.
Kennedy did not sign a civil rights act into law, one of his main contributions to the question of civil rights and specifically to equal employment would be through executive action.

Morally, Kennedy felt job discrimination was reprehensible and sought to mitigate the issue legally. While attempting to get civil rights bills through Congress, Kennedy and Vice President Johnson agreed that employment could be a vehicle through which blacks could achieve equal rights, “forcing equal employment opportunity, especially in the South” as a strategy. Politically, Kennedy relied on federal hiring largely due to the difficulty in moving civil rights legislation through Congress, while Johnson viewed on-the-ground equal employment as a means to integrate the South. Federal employment specifically would increase momentum with regard to civil rights for blacks, as federally contracted agencies were mandated to follow federal guidelines in order to review federal funding. In order to legitimately work on equal employment opportunities for blacks, Kennedy signed Executive Order 10925 on March 7, 1961. This order “[provided] “sanctions and penalties” for discriminatory employment practices in all plants filling government contracts.” To enforce the order, Kennedy also created the President’s Committee for Equal Employment Opportunity (PCEEO) in 1961 by executive order, which later created the Plans for Progress.

First, Kennedy designated Vice-President Johnson as chairman of the committee. He then ordered a committee to research the government’s employment practices with regard to race, in order to determine what changes needed to be made. As committee chairman, Vice-President Johnson “called several meetings of government contractors, industrialists and chamber of commerce executives [and] included…some large employers who did not have government contracts.” Supposedly, this committee received 1700 complaints of employment discrimination, of which 72 percent were mitigated. For example, Roy Wilkins, the director of
the NAACP, complained to Vice-President Johnson about racial discrimination at the Lockheed Airplane plant in Georgia, which Johnson responded to swiftly. As chair, Johnson took the opportunity to forge relationships with prominent black leaders and was effective as the leader of the PCEEO.

This committee also found that most black Americans only held low-wage or menial jobs in the private sector and in federal employment. Kennedy also appointed a committee to study equal opportunity policies in the military services to ensure that discrimination in the armed forces was eliminated. In 1961, the PCEEO verified that out of the 12.6 percent of blacks that were federal employees nation-wide, only one black was a GS-17 and only one was a GS-18, in the highest civil service ranks. Kennedy’s call for investigating of discrimination in federal employment located the contractors who were allowing discrimination practices and terminated their contracts. As a result, the later widely-publicized Plans for Progress program was created by Johnson, which would theoretically allow government contractors to voluntarily sign agreements to research their employment practices and improve their hiring of blacks over time. Over 100 industrial employers cooperated voluntarily to support the elimination of employment discrimination. Among the first contractors to sign the Plan was Lockheed Martin in Marrieta, Georgia. Contractors such as Western Electric and Goodyear would also cooperate to ensure compliance with equal employment practices.

The Plans for Progress found problems in discriminatory hiring practices, yet actually solved few issues and could not enforce equal opportunity employment to the extent that was necessary to ensure that higher numbers of qualified blacks were hired. Complicating the PCEEO’s activities was the fact the PCEEO was deemed a “publicity sham” due to the request for contractors to volunteer instead of requiring that they comply with new federal hiring
practices. The PCEEO appeared to be ineffective enforcement; the committee surveyed 25 Plans for Progress contractors and only seven were compliant with the agreements made to combat employment discrimination. As a result, "the...Plans for Progress remained an embarrassment." The executive order acted as a “place-holder” to allow qualified blacks to ascend into the aeronautics industry, even though the methods of the PCEEO were largely ineffective to generate actual change. Perhaps the most salient contribution of the PCEEO was the commitment to research and findings that verified the dire situation of blacks in federal and general employment.

The 1960s: Black Experiences as Engineers and Mathematicians amid Civil Rights

Kennedy’s executive orders to mitigate discrimination in employment and Civil Rights legislation did open doors for blacks in federal employment, especially in NASA and other federal contracted industries. During this time, black candidates for federal employment heard about civil services positons through black colleges, universities and law schools. However, not enough blacks were responding quickly enough for Kennedy to associate blacks with the space race and make gains toward civil rights. In addition, federal officials made some efforts to hire black professionals, but could not offer blacks special treatment, and blacks had to qualify for their positions, further complicating the number of blacks hired and the expectations of rising numbers of blacks in federal employment. Even so, some blacks enjoyed the opportunities that these executive orders, civil rights legislation and committees created and upheld. Others struggled through institutions that would not accept or adhere to the new policy of equal hiring for blacks in federal employment and in the armed forces.

By the 1960s, several black engineers and mathematicians were enjoying the benefits of these new policies. In 1962, after years of serving as a mathematician at Langley, Katherine
Johnson was asked to work with the Flight Research Division for John Glenn’s flight, making accurate calculations for a three-orbit mission to match the IBM computer’s output. A year later, in 1963, the U.S Department of Labor, backed by President Kennedy and Vice President Johnson, circulated a pamphlet entitled “America is for Everybody”, celebrating the centennial of the Emancipation Proclamation and demonstrating progress in race relations by showing blacks (including Katherine Johnson) contentedly working at NASA. Just months later, Dr. Martin Luther King along with the SCLC and SNCC held the March on Washington for Jobs and Freedom. Dorothy Vaughn also successfully completed 20 years of service to the federal government and was commemorated at a ceremony at Langley Research Center. The success of these women amid the policy shift in federal employment for blacks was unprecedented and provides a positive experience for blacks, especially black women.

*Clyde Foster: ‘NASA Activist’*

NASA had employees who held official positions to address and foster racial integration as a result of the mandate of the PCEEO, and others who simply committed themselves to it without an official post. Clyde Foster was one such man. Foster worked for 30 years at NASA at the Marshall Space Flight Center in Huntsville, Alabama. Foster was a sort of non-violent activist for civil rights within NASA. Foster remembers the segregation in the south, as he grew up in Birmingham, Alabama during Jim Crow and lived in Huntsville. Foster quit easily obtained employment with NASA, in contrast to most blacks. He found out about technical jobs and the Army Ballistic Missile Agency (ABMA), which would later be subsumed into NASA, interviews and secured the position. Foster's job duties included calculating numbers from gauge in missiles and rocket engines during rocket test firings, which would later help engineers to determine the thrust of a missile. In 1962, there were many hearings relating the discrimination
if the MSFC. One such hearing involved a man who applied for a job at MSFC, followed up on his application and exam, was told that it was lost, his name was removed incorrectly from an eligibility list as a result. Such cases were common. Clearly, the MSFC, though they claimed they were compliant with the PCEEO policies, were not hiring adequate numbers of lack employees. Whites within the MSFC believed they were supporting equal opportunity employment; however, Foster felt that not enough was being done to address integration, so he took action. One of Foster's main concerns was black professional's inability to attend white hotels for work-related seminars, which would lead to work promotions. NASA provided separate seminars for blacks in other states that would allow them into public facilities. However, Foster fought for segregated seminars in Hunstville so that blacks could attend these without having to travel, NASA provided. As a result of Foster's commitment and tenacity, over 100 blacks at the MSFC qualified for better jobs due to advanced training. However, other blacks experienced incredible backlash from policy on equal hiring in federal employment. One such experience was the plight of Edward J. Dwight, the forgotten black astronaut trainee of the early 1960s.

The Case of Edward J. Dwight: The "First Black Astronaut"

Though executive action and civil rights laws helped black mathematicians, engineers and pilots to secure positions in the aeronautics industry, the experience of being among the first blacks to integrate the industry was indeed daunting. During the time of Kennedy’s presidential campaign, the first astronauts were typical white, Anglo-Saxon, Protestant men in the military. Captain Edward Dwight’s presence would challenge the status-quo as he would train to become the “first black astronaut” in order to demonstrate not only that blacks should be hired for the aeronautics industry, but to show society that integrating blacks is patriotic and worth the social
and political struggle. Dwight endured unbelievable duress while training to become an astronaut, taking the risk of forever leaving the security of the air force to become a trainee. Dwight’s story is not very well known, though it encapsulates the complexities of integrating the aeronautical industry and federal contractors during the civil rights movement.

Dwight was selected as the first black astronaut trainees after Whitney Young suggested that blacks needed to “be more involved in the country’s…rapid technological growth” and that creating a black astronaut was the solution to encourage blacks to seek employment in the defense and aeronautics industries. In 1961, Edward Murrow, a famous WWII broadcaster, CBS News Commentator and director of the United States Information Agency (USIA) suggested in a letter to James E. Webb, NASA’s administrator that a qualified black man should be trained to fly so that space could be sold to a mostly non-white world. At first, Webb refused, on the grounds that candidates must be qualified and no blacks were qualified. In 1962, Murrow persisted, stating that they needed to find and train black test pilots. Kennedy soon was involved with the desegregating the armed forces which was the “prime source of astronauts,” setting the stage for the first black astronaut. Dwight would be the first attempt to get a black man into space and prove that integration was a policy worth implementing.

President Kennedy endorsed the call made from the White House to the Department of Defense, asking if there were any blacks on the new aerospace pilot’s course at the Edwards Air Force base in California. At the time, there was none, but the search began for a black air force pilot with the proper academic degree and flying experience. Dwight’s application was found and soon he received a letter from President Kennedy about the opportunity of “be one the greatest Negroes who ever lived.” Dwight decided to risk his career with the Air Force to become an astronaut. At first, Dwight developed friendships with the other trainees; soon,
however, as the stakes rose, Dwight realized that the other white trainees felt he was there only because he was black and did not earn the opportunity. He began to receive the cold shoulder and complained to about the treatment he was receiving to the White House, which sent investigated from the attorney general’s office to investigate. According to Dwight, he was maliciously told that he would not graduate; he was accused of being a militant Muslim and a “Kennedy boy”; he was also told by test pilot Colonel Charles Yeager that black men will never go into space and that they should wear an air force uniform. By 1963, Dwight graduated to Phase II of training in the aerospace research pilot course. However, Dwight was actually number 26 on the list and some phone calls were made for him to be 15 on the list. Dwight attended the training at the Aerospace Research Pilot’s School (ARPS), heralded by the press and the first black man to go to outer space. Dwight performed at mid-range standards, though Col. Yeager believed he was not qualified. In fall of 1963, Dwight was not selected and two white men were. Dwight called racism, while Yeager maintained that he was not qualified. In the end, Yeager showed civil rights lawyers Dwight’s poor grades and need for additional tutoring, to which these lawyers agreed as to why Dwight was not selected and dropped the case. However, Dwight was in many ways still unable to overcome “the dogged racism that continued to hound the armed services and NASA.” NASA maintained the Dwight’s “experience, recommendations and educational background were substantially below those of the other candidates submitted by the Air Force. He was, therefore, eliminated from the selection…” By 1966, Dwight resigned from the Air Force, though NASA still claimed the legacy of attempting to send the first black man to space.
Civil Rights Act of 1964

Becoming law under Lyndon B. Johnson, the 1964 Civil Rights Act “forbade racial discrimination in privately owned places of employment, and gave the attorney general the authority to file civil suits on behalf of victims of discrimination. Voting discrimination was outlawed and a commission was created to investigate discrimination by employers and labor unions.”98 Additionally, it allowed the "attorney general to initiate desegregation cases and allowed HEW to withdraw federal funds from offending school districts."99 Additionally, the Equal Employment Opportunity Commission was created to enforce the law and combat racial discrimination.100 After this civil rights act was finally passed, blacks and all U.S. citizens were provided access to federal employment and fair, inclusive treatment from federal employers, though in practice this was not necessarily the case. As the 60s rolled on, many blacks began to discover that, even with legislation supposedly guaranteeing equal treatment in employment, they still did not have access to certain opportunities and were subject to institutions that devised ways to maintain few to no black employees.

Conclusion

During the 1960s, blacks indeed experienced gains within the realm of federal employment. The executive orders on employment, only with Civil Rights legislation that included employment in 1964, greatly contributed to the sustained the presence of blacks within the aeronautical field and the physical desegregation this industry at the federal level. By the mid-1960s, the mid-1960s, many black college students responded to recruitment advertisements for employment at Langley101. These students were able to follow in the footsteps of their predecessors, who managed to get hired due to the existence of Executive order from the 1940s and the necessity of qualified engineers and mathematicians during WWII. Blacks were
employed there and elsewhere within NASA—as engineers, mathematicians and pilots through
the armed forces, some eventually becoming astronauts. For example, black astronauts Major
Robert H. Lawrence, Colonel Guion S. Bluford and Ronald E. McNair all achieved the honor of
becoming among the first black astronauts by the late 1960s and early 1970s, in part due to the
risk Edward Dwight took to become the first black astronaut trainee. Had Kennedy not created
the Executive Order 10925 and efforts were not made to integrate NASA and other federal
contractors, it may have been years before blacks could qualify to explore space at astronauts. It
was not until the Civil Rights Bill of 1957, along with the formation of NASA in 1958, that there
would be a shift toward actively ensuring that more numbers of qualified blacks were hired.
During the Civil Rights Movement, NASA was charged with an incredible feat to integrate and
blacks employed there experienced some resistance to integration while also being called upon to
contribute their knowledge to the space race.

However, all of this seeming success was not without its challenges. First, the numbers of
blacks already present in the industry were dismal—enough for President Kennedy to take notice
and mandate the PCEEO to determine why the numbers were so small. In the 1960s, Langley
had only hired five engineers and sixteen mathematicians, which was an ongoing issue.
Second, NASA and other government contractors were located in the South. The reputation of
the South as a hotbed for perpetual racist practices alone deterred many would-be black
mathematicians and engineers from seeking federal employment in that region. As a result, space
centers recruited from "technicians and technologists raised and trained in the South," while only
20% were from other parts of the country. In order to attract blacks there, and address the
concern about employment and civil rights, President Kennedy pushed through EO 10925, which
mandated that government contractors and NASA hiring blacks on an equal level and
desegregate the industrial complexes. Vice-President Johnson chaired the PCEEO, hearing compliant from blacks being treated unfairly and enforcing EO 10925. The actions of these two politicians were great catalysts to desegregation in the South. However, it took some time for NASA and government contractors to come on board to treat black employees equally. From oral histories of these mathematicians and engineers, we know that, into the 1960s, they did not receive equal treatment, though they contributed greatly to the space race. Some had typical experiences of discrimination through “separate but equal” facilities at industrial complexes; others endured harsher treatment such as racial slurs and being isolated and ignored. Still, some blacks took the opportunity of a lifetime and contributed to space research.

In this time period, the question of fair and equal employment was viewed as part of a larger civil rights agenda. Indeed, King held the March on Washington for Jobs and Freedom in 1963 in order to bring to President Kennedy and Washington D.C.’s attention that access to jobs was at the forefront of the understanding for ‘rights’ for all. King himself repeatedly noted the importance of accessible employment for blacks and others. However, since many southern and middle class whites deemed access to any civil rights, including employment, as threat to white tradition and security, the white Southern Democrats in Congress could not willingly and openly allow blacks to be given the same civil (and employment) opportunities as whites. Southern Democrats viewed civil rights as a ‘state’s rights’ issue and did not desire the federal government to dictate hiring practices. The political issue of civil rights perpetuated cycles of filibustering in the Senate to prevent Civil Rights Bills from making it of the floor. To circumvent this phenomena, several Presidents opted to create and sign executive orders, which Congress could not usurp and of which only a subsequent president could annul. These executive orders also created committees that observed, researched and enforced these executive orders. Meanwhile,
civil rights bills were brought forth in Congress and “killed” in Congress. Finally, in 1964, access to fair and equal employment opportunities were included on a civil rights bill and passed through Congress. During the Civil Rights era, the executive order seemed to be the only means to make any semblance of legislative progress on the issue of the civil right to employment, as the first civil rights bills did not include access to equal employment. Sustained federal involvement in civil rights through the executive orders and committees helped to provide a solution until the rights demanded were achieved by law in the Civil Rights Movement.

Ultimately, the blacks that were involved in equal opportunity employment in the federal government were part of a process the characterized the “long-sixties.” Beginning in the 1940s with executive orders, some black mathematicians, engineers and pilots secured employment within the aeronautics industry. As the late 1950s ushered in the Civil Rights Movement, blacks in the aeronautic fields were part of a local community of blacks cooperating to work toward change. The local presence of the black freedom movement eventually changed U.S. law and politics. Simply these blacks’ presence in the aeronautics fields in the midst of contesting black rights to U.S. citizenship was a form of protest. As the Civil Rights Movement gained momentum by the early 1960s, blacks in the aeronautics fields had to be prepared for obstinate attitudes about their abilities due to their race, while at the same time encountering whites who wanted change themselves and saw blacks as equal and capable. Though these professionals did not actively protest within NASA and other government contracted industries, they protested individually when they could in the form of taking small actions, such as taking a “colored” sign down, asking for a restroom and organizing segregated lectures and workshops to encourage black promotion within the field. The Civil Right Movement also encompasses these small ways of protesting, which all together created a huge movement as blacks and whites protested legal
segregation. Black professionals within NASA protested segregation while President Kennedy and President Johnson pushed through legislation that would finally grant them the constitutional rights to integration and fair treatment with any employer, including the federal government. After desegregation of federal employment, the rest of the country was mandated to follow suit after the Civil Rights Act of 1964 was passed. Equal opportunity employment thus began with brave black engineers, mathematicians and pilots calculating their protests against segregation and unfair treatment within NASA and other government contracted industries as federal employees during the 1960s. These men and women were successfully part of the challenging equation that led to a solution for the civil rights issue of not only equal access to federal employment, but equal employment for all.
Endnotes


8 Ibid., 6


10 Stern, *Calculating Visions*, 123.


12 Ibid., 315.

13 Ibid., 315.


18 Paul and Moss, *We Could Not Fail*, 8.

19 Ibid., 15.

20 Ibid., 17.

21 Now known as the Florida Institute of Technology.

22 Paul and Moss, *We Could Not Fail*, 30

23 Ibid., 50.

24 Ibid., 53.


26 Ibid., 53.

27 Ibid., 57, 60.

28 Ibid., 54.

Ibid., 15.

Ibid., 95.

Ibid., 8.

Ibid., 44.


Stern, *Calculating Visions*, 146.

Bryant, *The Bystander*, 123

Ibid., 170.

Ibid., 94.

Phelps, *They Had a Dream*, xiv.

Paul and Moss, *We Could Not Fail*, 27.

Ibid., 2.

Phelps, xv.

Shetterly, 44.


Paul and Moss, *We Could Not Fail*, 5.

Paul and Moss, *We Could Not Fail*, 5


Golden, *Mr. Kennedy and the Negroes*, 82.


66 Ibid., 81.
67 Ibid., 80, 81; Stern, *Calculating Visions*, 154.
68 Golden, 83.
70 Ibid., 216.
71 Ibid., 148-149.
72 Ibid., 216.
73 Ibid., 216.
74 Brauer, *Second Reconstruction*, 84.
75 Bryant, *The Bystander*, 213.
77 Ibid., 227.
78 Ibid., 229.
79 Paul and Moss, 151.
80 Ibid., 158.
81 Ibid., 158.
82 Ibid., 164.
83 Ibid. 165.
84 Ibid. 167.
85 Ibid. 168.
86 Ibid. 168.
87 Phelps, *They Had a Dream*, xv.
88 Ibid., xvii.
89 Ibid., xvii.
90 Ibid., xviii.
91 Ibid., xviii.
92 Ibid., xix.
93 Ibid., 6.
94 Ibid., 7.
95 Ibid., 10.
96 Ibid., 24.
97 Ibid., 35.
98 Phelps, *They Had a Dream*, 29.
99 Bryant, *The Bystander*, 256.
102 Ibid., 230.
103 Paul and Moss, *We Could Not Fail*, 162.
Bibliography


